

(AAPA), as set forth in the Background section of this application. Applicant respectfully traverses these rejections.

Claim 1 recites a method for memory management, in which portions of a computer memory are allocated to data objects using mutator threads of a program executed by the computer. The data objects are traced so as to mark the reachable data objects. The computer loops over the mutator threads so as to verify for each mutator thread that every update to the allocated portions of the memory in progress by the mutator thread has been completed. The heap is then swept so as to free memory for reallocation to new data objects.

In rejecting claim 1, the Examiner associated the step of "looping over the mutator threads" with the recitation on page 2, lines 16-19, that "the execution of application program threads that may update and change the object graph goes on concurrently with the marking and sweeping operations carried out by collector threads." This passage does indeed relate to updates to the memory by the mutator threads, but it says nothing whatsoever about looping over the mutator threads or verifying for each of the mutator threads that every update has been completed, as required by claim 1. There is no

teaching anywhere in the Background of the Invention of looping over mutator threads in this manner.

In fact, from the context of the passage cited by the Examiner (page 2, lines 23-28), it is clear that no verification of update completion has taken place: "The running program may change the object graph even during the very steps of tracing out reachable data objects by the collector. As a result, there is a risk that the collector may miss marking a live object, and the live object will then be reclaimed during the sweep phase of the collector."

Thus, the prior art described in the Background of the Invention does not anticipate or even suggest the step of "looping over the mutator threads...", as recited in claim 1. The conditions for rejections for anticipation are set forth in MPEP 2131:

TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)... "The identical invention must be shown in as complete detail as is contained in the... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Therefore, claim 1 is believed to be patentable over the cited art. In view of the patentability of claim 1, claims 2-6, 11 and 12, which depend from claim 1, are believed to be patentable, as well.

Claims 13-18, 23-30, 35 and 36 recite computing apparatus and a computer software product, which operate on principles similar to the methods of claims 1-6, 11 and 12. These apparatus and software claims were rejected on the same grounds as claims 1-6, 11 and 12. Therefore, for the reasons stated above, claims 13-18, 23-30, 35 and 36 are also believed to be patentable.

Claims 7-10, 19-22 and 31-34 were deemed to recite allowable subject matter, but were objected to for depending from rejected base claims. In view of the patentability of the independent claims in this application, as explained above, Applicant believes that this objection should be withdrawn.

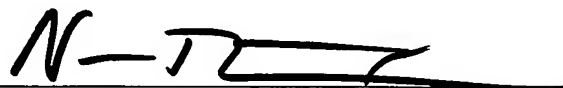
Applicant has studied the additional references made of record by the Examiner, and believes the claims in this application to be patentable over these references, as well, whether they are taken individually or in any combination.

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Applicant believes the remarks presented hereinabove to be fully responsive to all of the objections and grounds of rejection raised by the Examiner. In view of these remarks, Applicant respectfully submits that all of the claims in the present application are in order for allowance. Notice to this effect is hereby requested.

Respectfully submitted,

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